SWFSC Marine Mammal Abundance Data for Input into LMRIS

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Citation

Ferguson, Megan C. and Jay Barlow. 2001. Spatial distribution and density of cetaceans in the eastern tropical Pacific Ocean based on summer/fall research vessel surveys in 1986-96. NOAA Administrative Report LJ-01-04

Abstract

We estimated meso-scale density and abundance of cetaceans in the eastern Pacific Ocean during the summer and fall seasons. The study area encompasses over 25 million km^2, ranging from the tip of the Olympic Peninsula to the north, the coast of Peru to the south, and the Hawaiian archipelago to the west. Cetacean sighting data were obtained from nine research vessel surveys conducted between 1986 and 1996. We used line-transect methods to analyze the data, relying on published estimates of the line-transect parameters *f(0)* and *g(0)*. When data were adequate, we stratified geographically by 5-degree squares of latitude and longitude. Our results illustrate clear patterns in cetacean distribution and abundance that differed for virtually every species.

Research into the next phase of the project, modeling cetacean densities, is ongoing. Seven years of oceanographic and marine mammal sighting data have been compiled from the National Oceanographic and Atmospheric Administration Southwest Fisheries Science Center's databases. The data were collected during the MOPS 1986-1990, CAMMS 1991, and PODS 1993 marine mammal surveys. Marine mammal sighting data were available for 54 species, stocks, or species groups, some of which may be pooled or omitted (depending on the quantity of data) in the final models. Oceanographic data were collected from the survey vessels concurrent with the visual marine mammal surveys. The oceanographic variables that will be considered in the models for their potential to explain the observed pattern of cetacean densities include the following: sea surface temperature, sea surface salinity, thermocline depth, thermocline strength, depth of the euphotic zone, discrete surface chlorophyll concentration, and total integrated chlorophyll concentration. Additional environmental variables that will be considered include latitude, longitude, distance offshore, water depth, and slope of the ocean bottom at the location of each sighting. The extracted data have been converted into the format required for input into SPlus, the statistical software in which the generalized additive models for cetacean density will be created. The model-building phase will begin shortly.

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13. ABSTRACT (Maximum 200 words)

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